

6 JAN 1983

TRW

**Systems Engineering &
Applications Division**
TRW Defense Systems
Group

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McLean, VA 22102
703.734.6000

1 January 1983

He will not attend

gfd no

ES - no

ODP
Washington, D.C. 20505

Attention: Mr. Bruce Johnson

Subject: TRW's DSG IR&D Symposium

I would like to invite you to attend a one-day review of TRW's Defense Systems Group major IR&D programs in the communications and information processing areas. The review will be held at TRW's McLean, Va. facility (located on Route 123 at Tyson's Corner) on Thursday, January 20, 1983. It will include briefings of our IR&D results in such areas as distributed data processing systems, automated firmware design, relational data base management systems, artificial intelligence, Ada technology, and software productivity aids. We will also discuss technology planning and the prioritization process which led to selection of the projects. All briefings will be unclassified.

Our primary intent in holding the review is to demonstrate how valuable our IR&D work is and can be to the government. Through this symposium, we hope to make our government representatives more aware of our IR&D content and to receive feedback on the relevance of technical approaches taken by our projects.

A draft agenda for the review is enclosed. In keeping with government regulations there will be a nominal charge if you wish to attend the reception at the conclusion of the meeting.

I hope you will be able to attend the review or send a representative from your organization. We are planning on a government attendance of approximately 50 people. We will contact you in about a week to see whether you will be able to attend. In the meantime, please feel free to call Dr. J. M. Gormally, (703) 734-6168, for further information on the review.

TRW Inc.

J. R. Larkin

J. R. Larkin
Vice President and General Manager
Systems Engineering and Applications Division

TRW Inc.

TRW IR&D SYMPOSIUM

20 January 1983

o SOFTWARE PROGRAMMER PRODUCTIVITY

Provides an automated office environment for professionals in which they can perform in new, more efficient ways, resulting in increased programmer productivity. Goals are to double productivity by 1985 and quadruple it by 1990. Measurements are being made of methods implemented and actual productivity increases.

o RELATIONAL DATA BASE MANAGEMENT SYSTEM

Provides capabilities necessary to use the potentially powerful relational DBMS in practical applications: e.g., techniques for exploiting data-base machines like the Britton-Lee IDM500; query languages better suited for relational queries; data structures for applying relational DBMS capabilities to geographic data bases, software tools, etc.

o NETWORK ENGINEERING

Provides programming language constructs and operating-system capabilities for developing distributed data processing systems in ways which avoid some of the classical DDP pitfalls -- e.g., race and deadlock problems.

o FAULT TOLERANCE

Provides a flexible network of microprocessor systems that could support a variety of configuration and assessment options. Addresses and resolves many operating system and supporting software problems, and establishes an operating network key to future efforts in fault tolerance. Current activity provides development and evaluation of fault detection mechanisms, specifically for microcode diagnostics on the CPU and error correction on memory.

o MAN-MACHINE INTERFACE

Provide a Dialog Design Language and associated computer-graphics capabilities enabling designers of interactive systems (C² systems, ground stations, fusion centers, automated offices) to compose displays, define sensitive areas on the display, assign meanings to sensitive areas, and pass those meanings to the computer programs that perform desired user functions. Greatly enhances modification of displays and programs as user requirements change.

o MILITARY MICROPROCESSOR FAMILY

Provides the capability for microprocessors to implement military standard instruction sets. Developed features include: Architecture emulating the AN/UYK-20 standard military architecture; the development of an Instruction Set Architecture to support the direct execution of Ada; processor design/demonstration whose architecture emulates DEC VAX 11-780 with twice the throughput; and processor design/demonstration whose architecture directly executes the intermediate code of an Ada language subset. Current activities will complete the execution-oriented Ada model for the full Ada language, demonstration a 10:1 throughput improvement over schemes involving Ada compilers and conventional ISA's.

o INSTRUCTION SET EMULATION

Provides design and development of the avionics computes using the Standardized Instruction Set Architecture (MIL-STD-1750A). Develops emulator and instrumentation hardware, as well as microcode for the emulation support processor that provides operator interface and instrumentation control functions.

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Interoffice Correspondence TRW Defense Systems Group

TRW

Subject
CAMS2 (P/S) Report

Date
18 October 1983
CAMS2 LS-1205-83

From *L. Summerill*
L. Summerill

To
J.R. Larkin

cc

Location/Phone
W2/2157/6720

A major success this week was the on-schedule delivery of the Operational Data Transfer (ODT) tapes. That achievement signaled both the spirit and the competence of the entire project team -- being completed on Sunday after overcoming extensive operational problems.

The IDM System, particularly the interface with the IBM 3033, has become a top priority project concern. In spite of BLI assurances that the Block MUX boards were fully operational, an operational system has not been demonstrated; BLI now reports fresh problems with interface micro code, and, further, the production boards still fail diagnostic tests in Los Gatos. To add increased focus to the resolution of the problems plaguing the system, we are sending a team to participate with BLI in round-the-clock testing on the IBM 3033 at ESL.

Testing continues to receive first priority across the project, and the ODT achievement over the weekend reflects the leadership of the System Test team; 53 of the 120 total integration test cases have now been executed, up six from last week, with a reliable estimate of a ten per week rate between now and completion in mid-December.

November milestones, including the 7 November external exchange, and the 10 November Design Concept Review (DCR) for the first IOC release, are on schedule. The development of the IDM Dump/Restore software has been initiated and is scheduled to be completed successfully within the available time. Documentation of the As-Built Software and the User's Manual is progressing on schedule. Accordingly, in spite of the IDM hardware and operational problems, the project is on schedule to IOC.